ArgoNavis Transcoder Installation and User Guide

Version 10.0.5.x

ArgoNavis Encoder User Guide

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Introduction

Vela Research is pleased to introduce the ArgoNavis System. The ArgoNavis provides advanced, multiformat encoding, decoding, and transcoding capabilities with flexible software and hardware module options.

Special Notes on the Touch Screen

If equipped with a Touch Screen, after unit power up, please allow several seconds for the Touch Screen drivers to load prior to 'touching' the Touch Screen.

The Touch Screen is controlled via USB. Included with the Touch Screen is a USB cable. Connect the USB cable from the Touch Screen to any available USB connector on the ArgoNavis unit.

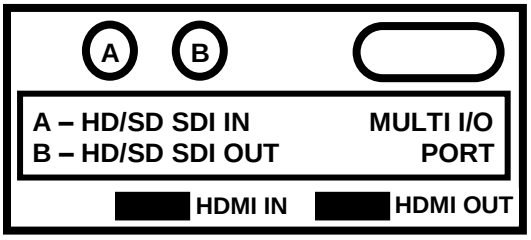
Physical Connections

Note that the ArgoNavis platform can be configured as an encoder, decoder, and/or transcoder and the inputs and outputs will be enabled/disabled based upon the configuration of the unit. For example, an encoder only unit will have only the inputs enabled. Likewise, the decoder only configuration will have only the outputs enabled. Finally, a transcoder only unit will have no physical audio and video inputs and outputs. Note that the transcoder is typically packaged with an encoder or decoder module.

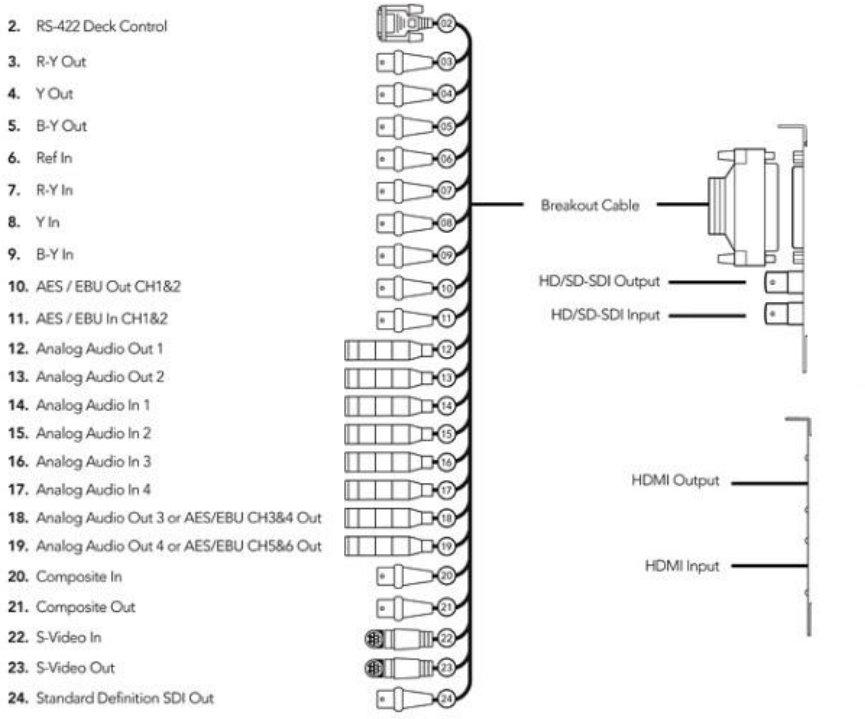
The ArgoNavis Input system comes in three different input/output configurations:

Encoder Pro Model Rear Panel label

4000-xxxx-3 ArgoNavis Encoder Pro



Encoder Pro Model Connection Diagram


2. RS-422 Deck Control
3. R-Y Out
4. Y Out
5. B-Y Out
6. Ref In
7. R-Y In
8. Y In
9. B-Y In
10. AES / EBU Out CH1&2
11. AES / EBU In CH1&2
12. Analog Audio Out 1
13. Analog Audio Out 2
14. Analog Audio In 1
15. Analog Audio In 2
16. Analog Audio In 3
17. Analog Audio In 4
18. Analog Audio Out 3 or AES/EBU CH3&4 Out
19. Analog Audio Out 4 or AES/EBU CH5&6 Out
20. Composite In
21. Composite Out
22. S-Video In
23. S-Video Out
24. Standard Definition SDI Out
Breakout Cable
HD/SD-SDI Output
HD/SD-SDI Input
HDMI Output
HDMI Input

Encoder Pro Model Connector Table

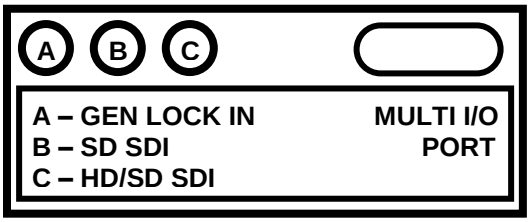
Connectors	
SDI Video Input	HD/SD Switchable 75 ohm BNC
Component Video Input	Y, Pb, Pr on 3 BNC
Composite Video Input	BNC
S-Video Input	S-Video Connector
HDMI Video Input	HDMI type A Connector
Analog Audio Input	4 Channels via ¼" jack connectors. Jack connector is TRS (Tip, Ring, Sleeve) Balanced 110 ohm at +4 dBm reference level.
AES/EBU Audio Input	2 Channels Unbalanced 75 ohm BNC
SDI Audio Input	8 Channels Embedded in HD or SD
HDMI Audio Input	2 Channels Embedded in HD or SD
Sync Input	75 ohm BNC. Blackburst in PAL and NTSC formats or Tri Level Sync in any format. **Not Used on the Encoder.**
Device Control	Sony compatible RS422 deck control.

Encoder Pro Model Breakout Cable Pinout.

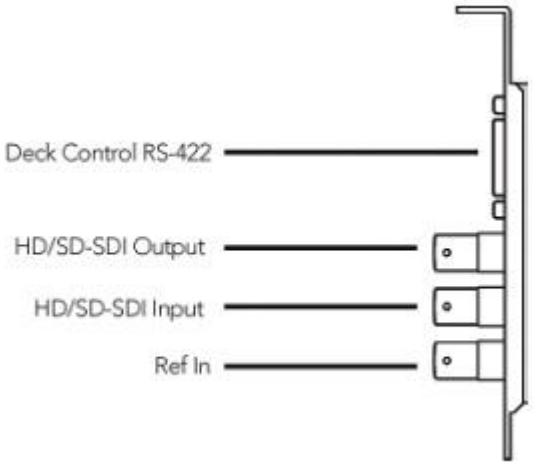
Breakout pin	Label	Tail end
1	RS422 pin 1	2
2	RS422 pin 8	2
3	Audio Out CH4/AES 5&6 Tip	19
4	Audio Out CH4/AES 5&6 Ring	19
5	Audio Out CH1 Tip	12
6	Audio Out CH1 Ring	12
7	Audio In CH4 Tip	17
8	Audio In CH2 Tip	15
9	GROUND	1
10	REF In (+)	6
11	R-y out (+)	3
12	y out (+)	4
13	B-y out (+)	5
14	S-Video In (3)	23
15	S-Video In (4)	23
16	SD-SDI Out (+)	24
17	RS422 pin 3	2
18	RS422 pin 7	2
19	GROUND (Tail End 18,19)	19
20	GROUND	1
21	Audio Out CH2 Tip	13
22	Audio In CH4 Ring	17
23	Audio In CH2 Ring	15
24	Audio In CH1 Tip	14
25	composite in (+)	20
26	GROUND	1
27	GROUND	1
28	GROUND	1
29	GROUND	1
30	Composite Out (+)	21
31	RS422 pin 2	2
32	AES/EBU In CH1 & 2	11
33	AES/EBU Out CH1 & 2	10
34	Audio Out CH3/AES 3&4 Tip	18
35	Audio Out CH3/AES 3&4 Ring	18
36	Audio Out CH2 Ring	13
37	Audio In CH3 Tip	16
38	Audio In CH3 Ring	16
39	Audio In CH1 Ring	14
40	R-y in (+)	7
41	y out (+)	8
42	B-y in (+)	9
43	S-Video out (3)	22
44	S-Video out (4)	22
Sleeve	GROUND	1

Encoder SDI Model Rear Panel Label

4000-xxxx-2 ArgoNavis Encoder HD/SD SDI



Encoder SDI Model Connection Diagram

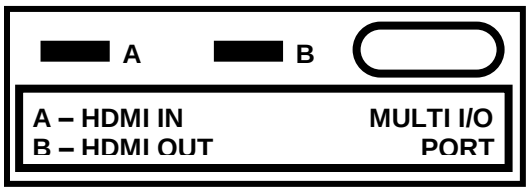


Encoder SDI Model Connector Table

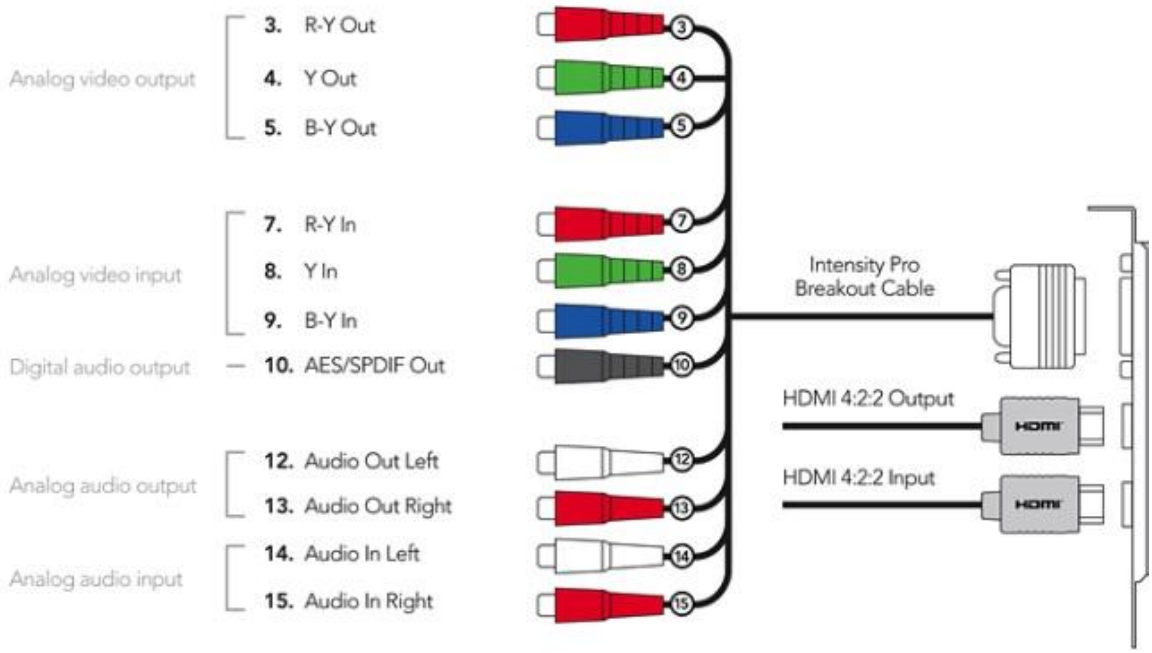
Connectors	
SDI Video Input	HD/SD Switchable 75 ohm BNC
Sync Input	75 ohm BNC. Blackburst in PAL and NTSC formats or Tri Level Sync in any format. **Not Used on the Encoder.**
Device Control	Sony compatible RS422 deck control.

Encoder Analog and HDMI Model Rear Panel Label

4000-xxxx-1 ArgoNavis Encoder Analog and HDMI



Encoder Analog and HDMI Model Connection Diagram



Encoder Analog and HDMI Model Connector Table

Connectors	
Component Video Input	3 x RCA Connector
Composite Video Input	1 x RCA Connector
Analog Audio Input	2 x Unbalanced RCA Connector. 1 Stereo Pair
HDMI Video	1 x HDMI Type A Connector
HDMI Audio	2 Channels Embedded in HDMI

System Specifications

Chassis
Model: 4000-2187-x (1.5 U Rackmount)
Dimensions: (WxHxD) 16.8 x 2.6 x 13 in. (427 x 66 x 330 mm)

Weight
Gross Weight: 19.6 lbs. (8.9 kg.)

System Input Requirements
AC Input Voltage: 100-240V AC auto-range
Rated Input Current: 5A max
Rated Input Frequency: 50 to 60 Hz

Power Supply
Rated Output Power: 220W
Rated Output Voltages: +3.3V (0 to 10A), +5V (12A), +12V (16A), -12V (0.3A), +5Vsb (0 to 2A), +5V and +3V total 80W max.

Operating Environment
Operating Temperature: 10° to 35° C (50° to 95° F)
Non-operating Temperature: -40° to 70° C (-40° to 158° F)
Operating Relative Humidity: 8% to 90% (non-condensing)
Non-operating Relative Humidity: 5 to 95% (non-condensing)

Drive Bays
2 x 3.5” Internal SATA drive bays

Note: The following items are subject to change based on configuration, part availability/obsolescence, and technological advances.

Motherboard
MSI Model: H67MA-E45

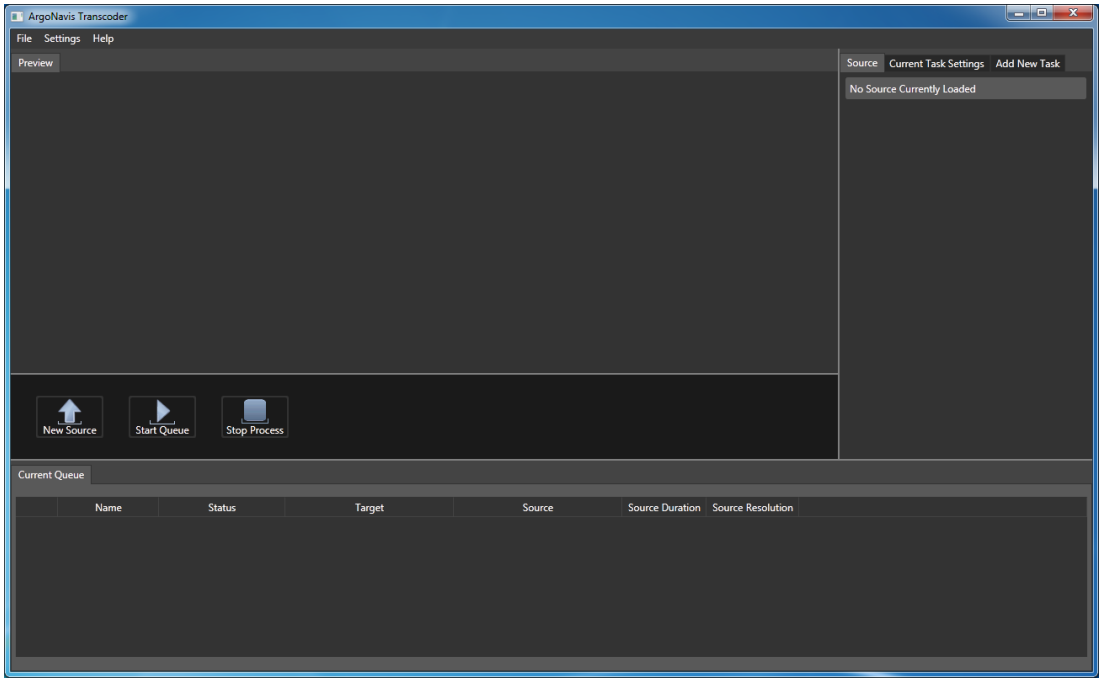
Processor (s)
1 Intel i5 2400 3.1 GHz Quad Core Processor

Memory
4 GB DDR3 1333 PC10600 RAM

HDD
1 x 1 TB 3.5” 7200 RPM SATA

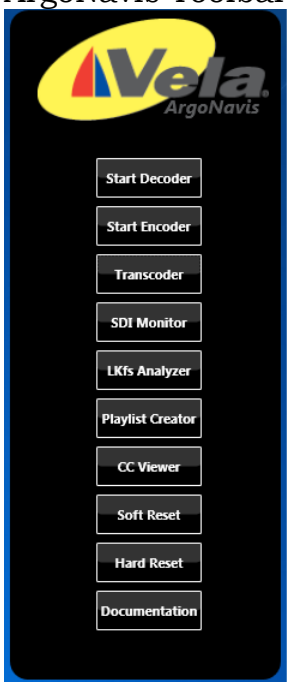
OS
Windows 7 Professional 32 Bit

ArgoNavis Operations



Launching the Application

The easiest way to launch the transcoder application is from the ArgoNavis Toolbar.



The Basic Transcode Process

The basic Transcode process involves the following steps:

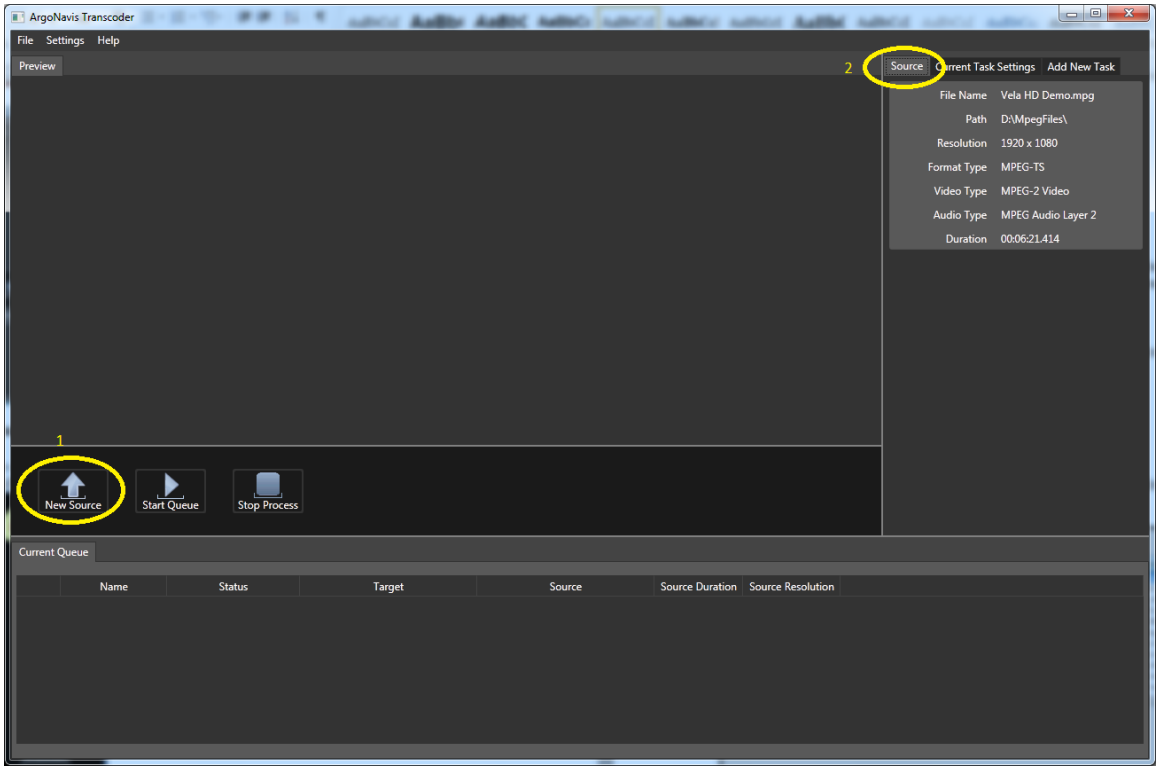
1. Loading a 'source' file to be transcoded
2. Setting the transcode parameters and adding the task to the Queue
3. Performing the Transcode

Source Files

A source file is the content that will be transcoded. Once loaded into the system the file can be transcoded into multiple formats and resolutions.

Loading a Source File

On the Transcoder User Interface select the 'New Source' button to open a browser and select a file.



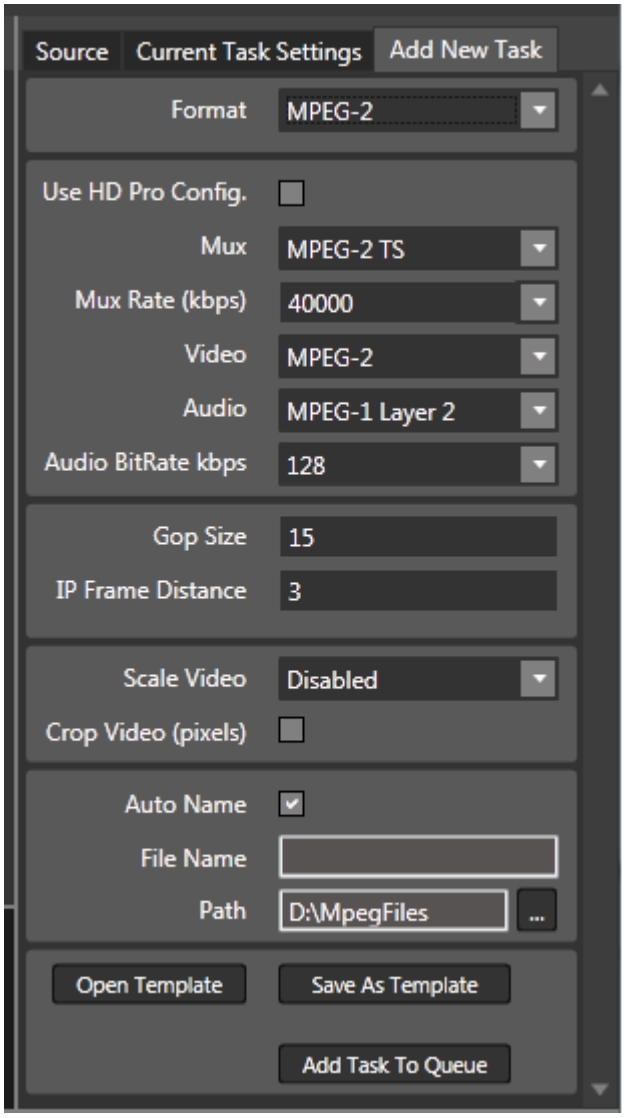
Clicking on the 'Source' tab will show a breakdown of the basic parameters of the source file.

Adding a New Task to the Queue

Once a source file has been loaded the transcoding parameters must be set. These parameters determine what the output file will be.

Setting Transcoder Parameter Values

To set the parameters select the 'Add New Task' tab



Format

Sets the type of file to be created. Possible Selections are:

MPEG-2
H.264 (MPEG-4 Part 10 AVC)
Windows Media

Use HD Pro Config

Available when the Format is MPEG-2.

When this checkbox is 'checked' the transcoder will output an MPEG-2 Transport Stream that is compatible with the Vela CineView HD Pro decoder and Vela HDPro Blade devices. These decoders and blades are used extensively in broadcast and ad distribution applications.

Mux

Sets the multiplexer (wrapper) to be used for the stream. Possible Selections are:

When Format = MPEG-2
MPEG-2 TS (Transport Stream)
MPEG-2 PS (Program Stream)

When Format = H.264
MPEG-2 TS (Transport Stream)

When Format = Windows Format
WMF (Windows Media Format

Mux Rate (kbps)

When the Mux Type is MPEG-2 TS:
Sets the aggregate bitrate including video, audio, and overhead.

When the Mux type is MPEG-2 PS or WMF:
Sets the video bitrate (audio bitrate and overhead will be added on top of this bitrate)

Possible values are:

When Format = MPEG-2
3000 kbps to 40000 kbps

When Format = H.264 or WMF
500 kbps to 20000 kbps

Video

Indicates the video codec used which is set by the Format type selected. Possible values are:

MPEG-2
H.264
WMV (Windows Media Video)

Audio

Sets the Audio codec to be used. Possible Selections are:

MPEG1 Layer 2 (typically used with MPEG-2 video)
AAC (typically used with H.264 video)
WMA (used exclusively with Windows Media Format)

Audio Bitrate

Sets the bitrate of the Audio. Possible values range from:

64 kbps to 384 kbps

192 kbps is typical for broadcast MPEG1 Layer 2 Standard Definition
384 kbps is typical for broadcast MPEG1 Layer 2 High Definition

128 kbps is typical for AAC and WMA applications

GOP Parameters for MPEG-2

Sets the size of the Group of Pictures to be encoded.

GOP Size: sets the distance between I Frames (anchor frames). Possible values are:
1 to 30

IP Frame Distance: determines the number of 'B' frames where n - 1 = number of 'B' frames. A value of 3 will result in 2 'B' frames between each 'I' and 'P' frame. Possible values are:
1 to 3

Typical broadcast values are
GOP Size: 15
IP Frame Distance: 3

This will yield an IBBP15 GOP

GOP Parameters for H.264

Sets the size of the Group of Pictures to be encoded.

I Frame Interval: sets the distance between I Frames (anchor frames). Possible values are:
1 to 200

Num B Frames: determines the number of 'B' frames. Possible values are:
0 to 2

Typical broadcast values are
GOP Size: 15
IP Frame Distance: 2

This will yield an IBBP15 GOP

Coding Scheme: sets whether to use CABAC (harder to encode…easier to decode) or CAVLC (easier to encode…harder to decode). Which format to use depends upon the capabilities of the target device. Typically, CABAC is used. Possible values are:
CABAC or CAVLC

GOP Parameters for Windows Media Format

GOPs are dynamically set depending on the content. No user settings are provided.

Scaling the Video Output

The video can be scaled to one the values listed in the drop box. Check the 'Scale Video' checkbox to enable scaling. Possible values are:
1920 x 1080
1280 x 720
720 x 480
640 x 480
544 x 480
320 x 240

Cropping the Video Output

The video can be cropped using x and y co-ordinates during transcoding. To crop the video check the 'Crop Video' checkbox and set the Left and Right x pixel values and the Top and Bottom y pixel values.

Filename and Path

Auto Name: Names the output file as a combination of the source filename and the transcode parameters.

Filename: Sets the name of the output file (not used when Auto Name is 'checked')

Path: Sets the path the output file is saved to.

Templates

Settings that are routinely used can be saved and recalled in the form of a template.

To save the current settings as a template select 'Save As Template'.

To recall saved setting from a template select 'Open Template'

Add Task to Queue

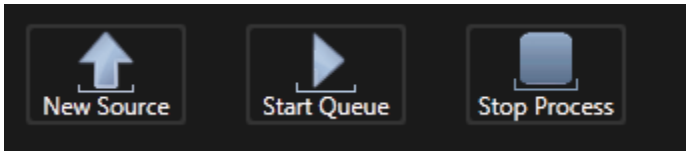
Select this button to add the source file with the current settings to the queue for transcoding.

Performing the Transcode

To Perform a Batch Encode

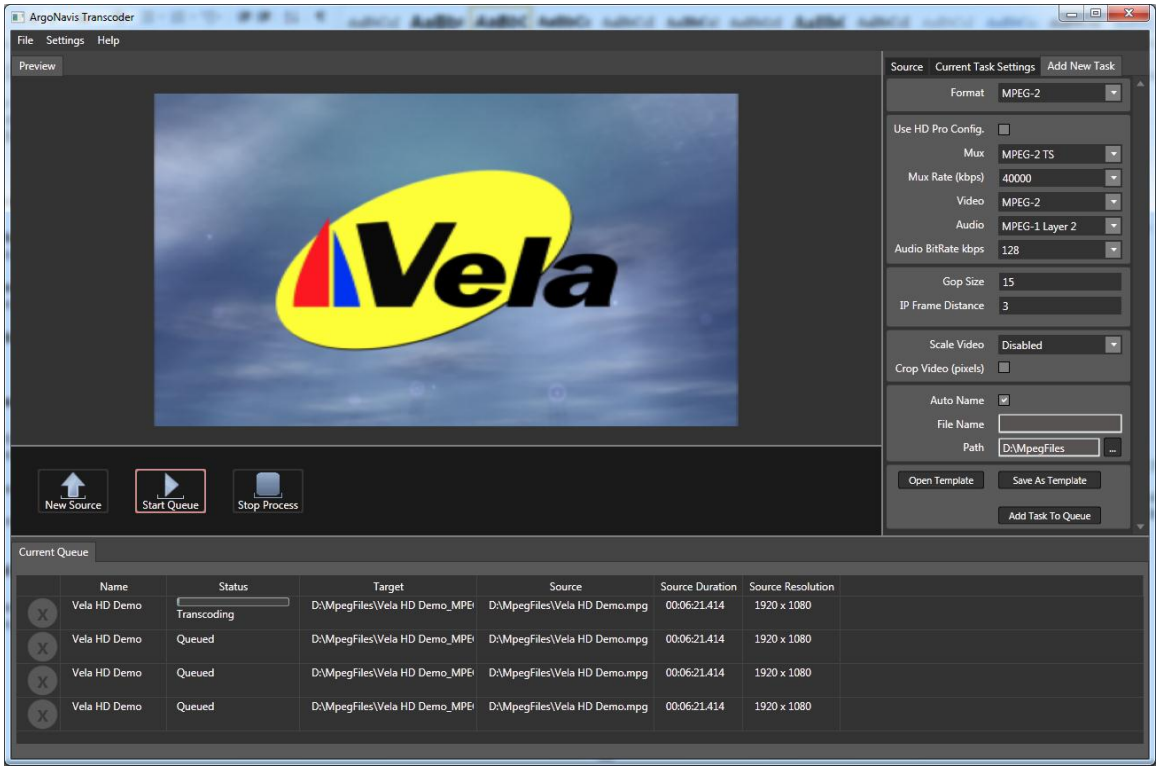
Repeat the 'Loading a Source File' and 'Adding a Task to the Queue' steps until you have loaded all of the files you wish to transcode.

Transcoder Controls



New Source: Loads a 'Source File' into the transcoder module
Start Queue: Starts the transcode of the files in the queue
Stop Process: Stop the transcode of the files in the queue

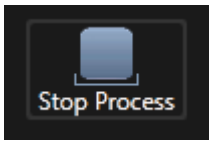
Starting the Transcoder


ArgoNavis Transcoder
File Settings Help
Preview
Source Current Task Settings Add New Task
Format MPEG-2
Use HD Pro Config.
Mux MPEG-2 TS
Mux Rate (kbps) 40000
Video MPEG-2
Audio MPEG-1 Layer 2
Audio BitRate kbps 128
Gop Size 15
IP Frame Distance 3
Scale Video Disabled
Crop Video (pixels)
Auto Name
File Name
Path D:\MpegFiles
Open Template
Save As Template
Add Task To Queue
New Source
Start Queue
Stop Process
Current Queue
Name Status Target Source Source Duration Source Resolution
Vela HD Demo Transcoding D:\MpegFiles\Vela HD Demo_MPE D:\MpegFiles\Vela HD Demo.mpg 00:06:21.414 1920 x 1080
Vela HD Demo Queued D:\MpegFiles\Vela HD Demo_MPE D:\MpegFiles\Vela HD Demo.mpg 00:06:21.414 1920 x 1080
Vela HD Demo Queued D:\MpegFiles\Vela HD Demo_MPE D:\MpegFiles\Vela HD Demo.mpg 00:06:21.414 1920 x 1080
Vela HD Demo Queued D:\MpegFiles\Vela HD Demo_MPE D:\MpegFiles\Vela HD Demo.mpg 00:06:21.414 1920 x 1080

To start the transcode process select ‘Start Queue’

Stopping the Transcoder

To stop the transcoder select ‘Stop Process’

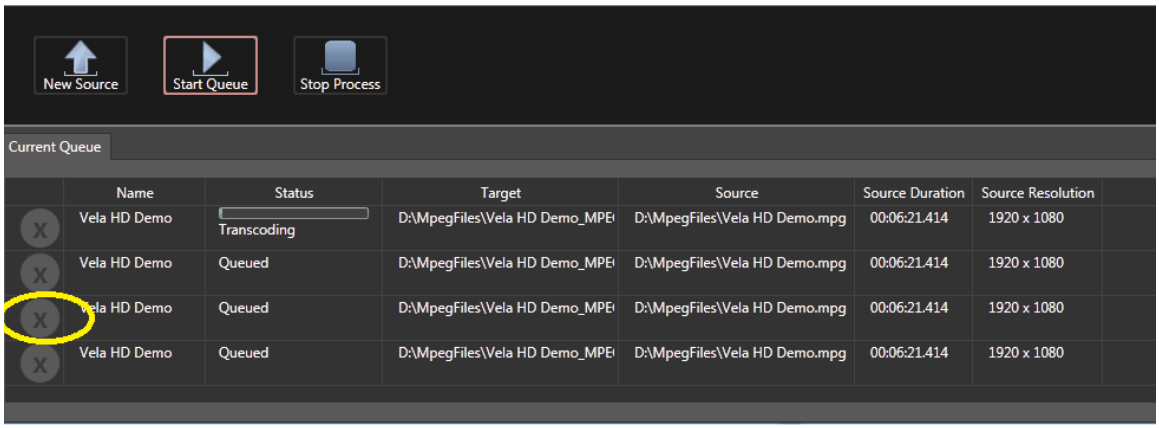


Current Queue

The ‘Current Queue’ provides indications of what file is currently being transcoded and the progress of the transcode.

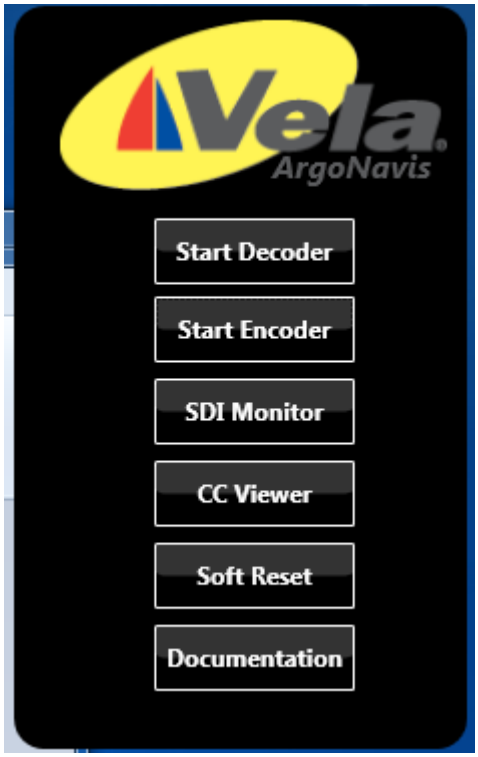
Removing a File from the Queue

To remove a file from the Queue click on the X button beside the file in question



Exiting the Application

Under normal conditions, shutdown the application using the windows x button.
Under abnormal conditions, use the Soft Reset on the Vela Toolbar and this will forcibly shutdown the vela programs and clear them from memory.



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